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# The Control of Infectious Fowl Bronchitis //



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## THE CONTROL OF INFECTIOUS BRONCHITIS

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Infectious bronchitis is characterized by its extremely rapid spread through the flock. So rapid is its spread that it frequently appears that the entire flock has simultaneously developed a "cold." The principal symptoms are coughing, sneezing, and breathing with a rattling sound. It differs from laryngotracheitis in that no blood is coughed up and from Newcastle disease in that no nervous symptoms develop. Although a tentative diagnosis of infectious bronchitis may be made on the basis of these symptoms, it must not be overlooked that an accurate, laboratory confirmed diagnosis is a difficult time consuming procedure. Except in young chicks, the disease ordinarily causes only a very low percentage of deaths. The greatest economic losses are suffered in the laying flock. There egg production is severely depressed.

Infectious bronchitis was first described 22 years ago, in 1931,<sup>1</sup> just at the dawn of an era that has been outstanding for discoveries concerning the viruses, those ultramicroscopic parasites which propagate only in the body of a suitable living host. The original describers of this disease, workers at the North Dakota Experiment Station, successfully demonstrated that it was caused by an agent capable of passing through filters fine enough to retain bacteria, thus proving that it was a virus. It is of passing interest to observe that the original name which they cautiously proposed still stands today unchallenged by a single synonym. The disease, as they observed it, primarily affected baby chicks and was considered a serious problem then confronting the hatcherymen. They mention that it was the cause for many unpleasant customer-hatcherymen relationships.

There is one other important discovery in the history of infectious bronchitis which should be mentioned. Six years after its discovery workers<sup>2</sup> at the New Jersey Agricultural Station successfully cultivated a strain of the virus on chicken embryos. This was at a time when cultivation of many of the viruses in chicken embryos was being successfully achieved. Recovery of infectious bronchitis from affected chickens by inoculation of chicken embryos is still today a difficult and tedious laboratory procedure because the virus leaves few clues by which its presence can be recognized.

By performing what is referred to in the laboratory as serial passages, that is inoculating embryonated eggs, then after several days of incubation collecting material from these eggs and reinjecting it into other embryonated eggs and by repeating this process again and again, this station succeeded in developing a strain of infectious bronchitis virus so adapted to chicken embryos that it caused the embryos to die several days after they were inoculated. Even today, 15 years after that achievement, this particular virus remains an important laboratory strain because of its embryo killing properties which in turn, renders it very desirable for many laboratory procedures.

Since its discovery, hardly a year has passed without some notable contribution adding to our knowledge of infectious bronchitis being made.

Today our principal problem concerns the control of this disease. While accurate information concerning the occurrence of the disease is lacking I think we can assume that it occurs throughout the United States. The economic losses caused by the disease would be extremely difficult to determine.

#### Control

In developing a control program for infectious bronchitis, we must first consider that the losses are in two categories, that is suppression of egg production in the breeding or laying flocks and increased mortality in chicks. Let consider first the control of infectious bronchitis in the laying flock. I should like to discuss an experimental method for immunizing layers which has been used for 12 years by the Massachusetts Agricultural Experiment Station.<sup>3</sup> More recently several other states have begun observations of experiments along this same line. The method is essentially this. While the young stock is still on the growing range and at least a month before they are ready to start laying, several birds in the flock are inoculated with a laboratory prepared culture of living bronchitis virus and then allowed to intermingle with the remainder of the flock, thus exposing and giving the entire flock infectious bronchitis. As immunizing methods go, this is somewhat unconventional, but due to the extremely infectious nature of bronchitis, the disease readily spreads from bird to bird. Now this really amounts to introduction of an outbreak of the disease in the flock at an age when no loss in egg production is suffered, yet at an age when the birds have vigor and the mortality is minimized. The resulting immunity, it is believed, lasts through the normal productive life of the bird, thus assuring the owner that egg production will not be interrupted by infectious bronchitis.

It is recognized that there are certain shortcomings to this method of immunization. First, there is the risk of the disease spreading to other susceptible poultry on the premises. Should these be young chicks, there is the possibility that appreciable mortality may be experienced.

Second, there is great risk that the disease will spread to neighboring flocks. If this happened the owner of the artificially inoculated flock might be held responsible for the losses occurring to his neighbor. I am informed that one state holds this aspect of immunization against bronchitis to be so hazardous that if a poultryman in that state desires to immunize his flock, he is required to sign an agreement whereby he assumes full liability should the disease spread from his premises.

Third, adverse climatic conditions may develop at the time the disease is given the birds on the range. In this case a much more severe reaction is encountered. In their weakened state the birds are made more susceptible to other diseases. To release themselves from liability where adverse results develop relative to this immunization procedure, laboratories preparing the virus cultures have found it necessary to secure written releases from farms using these cultures.

Fourth, it must be borne in mind that this procedure instead of controlling bronchitis could readily make the disease more widespread.

Fifth, introduction of this program in an area where flocks are raised for meat purposes would be hazardous.

The disease has less chance of being introduced in areas where the farms are isolated, so it is doubtful whether exposing such premises to the disease by artificial inoculation would ever be advisable. This leaves rather limited areas where an immunization program of this type might be undertaken.

Considering these difficulties, it is readily seen that immunization by this procedure should only be carried out in an organized manner. Any group contemplating starting a control program along this line will do well to approach it cautiously.

Now let us consider the control of bronchitis in the broiler flock. To start with, these birds are only held on a premises for an 11 or 12 week period and its the first 5 or 6 weeks of this period that is critical so far as mortality from bronchitis goes. In other words, if uncomplicated bronchitis occurs after this first month and a half of growing the mortality generally is not great. There are notable exceptions to this however.

For instance at the Bureau's Regional Poultry Research Laboratory at East Lansing, Michigan in 1950, a spontaneous outbreak of infectious bronchitis occurred where no disease other than lymphomatosis has existed since its construction in 1938. Many of the birds at the laboratory represent inbred lines and the lack of exposure to diseases other than lymphomatosis for many generations we would naturally believe, would render them extremely susceptible to bronchitis. Bearing this in mind the total mortality directly attributable to bronchitis was 14 percent for 6000 birds ranging in age from chicks to 600-day-old adults. This probably illustrates the extreme in mortality for this disease.

Now getting back to the prevention of bronchitis in the broiler flock, the one effective measure is to maintain the flock in isolation. By and large most chicken flocks are isolated units that seldom are exposed to disease by bodily contact with neighboring flocks so that they should remain free of the contact transmitted disease, except for the introduction of disease through some article traveling between flocks. In most cases man is the article that provides this communication. It cannot be over emphasized that only a very minute quantity of infected chicken dropping adherent to the shoes, outer clothing, feed bags, chicken crates, etc., is needed to introduce infection into a chicken flock. Every time a chicken house is entered by one who has just previously visited another flock there is great risk that particularly virus infection might be brought from the last farm to the one being visited.

Insects, such as flies and mosquitos, and the passerine birds, such as the English sparrow, probably play a very minor role compared to man in spreading poultry diseases from one farm to the next.

In locating new poultry houses, it is highly desirable that they not be built in areas already congested with poultry. Every effort should be made to locate them in areas completely away from other poultry farms.

Strict adherence to these recommendations should assist the broiler producer in greatly reducing the risk of having infectious bronchitis.

Perhaps it should be mentioned that once infectious bronchitis appears in a flock there is no medicinal treatment, which is effective against it. The birds normally go quickly through the acute phases of the disease. The most important consideration is to feed them a highly palatable feed. In younger birds it is important that brooder temperatures be properly regulated and perhaps slightly increased during the severe stages of the disease.

In conclusion may I restate that our present methods of preventing infectious bronchitis definitely have their limitations, especially in the congested poultry areas. Perhaps future research will develop more satisfactory methods for handling this disease.

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